CLAIMS

Claims 1, 7-12 have been amended for better readability. Claims 13 and 14 are new. No new matters have been added.

1. (Current amended) A method for distinguishing effects due to bifurcation from effects due to design variable changes used in a finite element analysis for designing a structural product, the method comprising:

obtaining in a computing device a plurality of finite element analysis responses for a set of design experiments, wherein each of the set of design experiments has a specific combination of design variables values;

constructing a metamodel from the plurality of finite element analysis responses; and

selecting a set of outliers from the set of design experiments whose finite element analysis responses are not predicted by the metamodel.

2. (Original) The method as recited in claim 1, further comprising:

identifying high likelihood bifurcation region by plotting an indicating quantity of the finite element analysis responses of the set of outliers; and

examining the finite element analysis responses of maximum and minimum of the set of outliers.

3. (Original) The method as recited in claim 1, wherein the metamodel is constructed using least squares fitting technique.

4. (Original) The method as recited in claim 1, wherein the metamodel is based on nodal displacement.

5. (Original) The method as recited in claim 1, wherein the metamodel is based on acceleration history.

6. (Original) The method as recited in claim 2, wherein the indicating quantity is chosen from the group consisting of standard deviation and range.

7. (Currently amended) A ~~software product to be executable in a computing device~~<u>computer program product including usable medium having computer readable code embodied in the medium for causing an application module to execute on a computer</u> for distinguishing effects due to bifurcation from effects due to design variable changes <u>used </u>in a finite element analysis<u> for designing a structural product</u>, the ~~software ~~<u>computer program </u>product comprising:

    program code for obtaining a plurality of finite element analysis responses for a set of design experiments, wherein each of the set of design experiments has a specific combination of design variables values;

    program code for constructing a metamodel from the plurality of finite element analysis responses; and

    program code for selecting a set of outliers from the set of design experiments whose finite element analysis responses are not predicted by the metamodel.

8. (Currently amended) The ~~software ~~<u>computer program </u>product as recited in claim 7, further comprising:

    program code for identifying high likelihood bifurcation region by plotting an indicating quantity of the finite element analysis responses of the set of outliers; and

    program code for examining the finite element analysis responses of maximum and minimum of the set of outliers.

9. (Currently amended) The <u>computer program </u>~~software ~~product as recited in claim 7, wherein the metamodel is constructed using least squares fitting technique.

10. (Currently amended) The <u>computer program </u>~~software ~~product as recited in claim 7, wherein the metamodel is based on nodal displacement.

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11. (Currently amended) The ~~computer program~~ software product as recited in claim 7, wherein the metamodel is based on acceleration history.

12. (Currently amended) The ~~computer program~~ software product as recited in claim 8, wherein the indicating quantity is chosen from the group consisting of standard deviation and range.

13. (New) A system for distinguishing effects due to bifurcation from effects due to design variable changes used in a finite element analysis for designing a structural product, the system comprising:

    an I/O interface;

    a communication interface;

    a secondary memory;

    a main memory for storing computer readable code for an application module;

        at least one processor coupled to the main memory, the secondary memory, the I/O interface, and the communication interface, said at least one processor executing the computer readable code in the main memory to cause the application module to perform operations of:

            obtaining a plurality of finite element analysis responses for a set of design experiments, wherein each of the set of design experiments has a specific combination of design variables values;

            constructing a metamodel from the plurality of finite element analysis responses; and

            selecting a set of outliers from the set of design experiments whose finite element analysis responses are not predicted by the metamodel.

14. (New) The system as recited in claim 13, the system further comprising operations of:

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identifying high likelihood bifurcation region by plotting an indicating quantity of the finite element analysis responses of the set of outliers; and

examining the finite element analysis responses of maximum and minimum of the set of outliers.